"Illinois Wind Resource Potential"

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Illinois Wind Electric Potential
(Installed Capacity)

	Total before exclusions	Developable
• Class 3+	6,260 MW	5,790 MW
• Class 4	3,160 MW	3,080 MW
• Total	9,420 MW	8,870 MW

Assumes ~12 MW/sq. mile (section) of windy land area

- Class 3+ lands = 380 - 400 W/m^2
- Class 4 lands = 400 - 440 W/m^2

These estimates were produced in 2001. Areas excluded were: national wildlife refuges; state protected lands (natural areas, natural preserves, parks, fish and wildlife areas, and conservation areas); urban areas; and major water bodies.

NREL's Wind Mapping System (2001)

- Computerized mapping system started in 1995 to produce 1-km^2 high resolution maps
- Uses Geographical Information System (GIS) software (ArcInfo® and ArcView®) and digital terrain data (1-km^2)
- Designed for regional wind mapping (not micrositing)
- Empirical and analytical approach

- Based largely on analysis of upper-air data, tall-tower measurements, and high quality meteorological station data

Logic of Mapping System

- Meteorological data, digital geographic data, and GIS software combined in wind power calculation modules
- Uses “top down” method to adjust upper-air winds for estimating base (50-m) wind power density values
- Base wind power density values are adjusted by terrain and stability factors in model

Conclusions on Illinois Wind Resources

- The new wind map identifies many areas of good (class 3+ and 4) wind resource in Illinois
- Best prospects for utility-scale wind projects:
  - Elevated terrain features in the vicinity of transmission lines, in northern and central Illinois
  - Wind potential of 3,000 to 9,000 MW of installed capacity from best areas
- With advances in wind technology and taller hub-heights, class 3+ areas becoming suitable for development